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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/069,588	02/27/2002	Keizo Akutagawa	Q68338	3867

7590 08/22/2003

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EXAMINER
ENGLISH, PETER C

ART UNIT	PAPER NUMBER
3616	

DATE MAILED: 08/22/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/069,588	AKUTAGAWA ET AL.	
	Examiner	Art Unit	
	Peter C. English	3616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 August 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10* is/are pending in the application.

4a) Of the above claim(s) *8-10* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *27 February 2002* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☒ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of Group I (claims 1-7) in Paper No. 6 is acknowledged. The traversal is on the grounds that Groups I and II are "technically interrelated". The examiner disagrees for the reasons given in item 2 of the previous Office action mailed on 15 July 2003. The restriction requirement is still deemed to be proper and is therefore made FINAL.

2. Claims 8-10 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim.

Drawings

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: 33L and 33R, mentioned at page 24, line 12.

4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: 32L and 32R, shown in Fig. 6.

5. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

6. The specification is objected to because:

At page 7, line 13, "horizontal-direction" should be "transverse-direction".

At page 11, line 4, "millimeters" should be inserted before "to".

On page 12, the numerals shown in subscript and superscript are difficult to read. In particular, at the ends of lines 1 and 7, it is unclear whether "ω" has the subscript "1" or "0".

At page 12, line 1, the terms "d^2x/dt^2", "ψ", "dx/dt" and "x" are not defined for Equation 1.

At page 13, line 15, "T_{cal}" should be inserted after "value", and "θ" should be inserted after "signal". See Fig. 3.

At page 13, line 16, "N" should be inserted after "speed", and "T_M" should be inserted after "torque". See Fig. 3.

At page 15, line 12, "the tires idle" is not understood. See also page 16, line 17.

At page 18, lines 11 and 15, "tire" should be "Tire".

At page 18, line 18, the term "α" is not defined for Equation 4.

At page 18, line 21, "K_x" should be "k_x".

At page 20, line 6, "200%" should be "2,000%". See claim 4. Also note that 10 mm times 2,000% equals 200 mm.

At page 20, line 6, "when the tread rubber thickness" should be inserted after "rubber".

On page 25, the sentence spanning lines 15-19 is confusing and not understood.

At page 26, line 5, "on" should be inserted after "turn".

At page 26, line 26 (last line), "than" should be inserted after "out".

At page 28, line 8, "proving" should be "providing".

The "Description of the Preferred Embodiment" (beginning on page 7) does not include a description of Fig. 8. The only description given of this figure is the brief description on page 7.

Appropriate correction is required.

Claim Objections

7. Claims 4-6 are objected to because of the following informalities:

In claims 4-6, at line 2, "modulated to" should be "modulated in a range of".

In claim 4, at line 2, "of the tire" should be inserted after "a tread" and after "rubber".

Appropriate correction is required.

Claim Rejections - 35 USC § 112

8. Claims 3 and 7 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The specification fails to provide an adequate description of the manner in which vibration is applied in the "width direction" and the "load support direction" of the tire. Specifically, the embodiment of Fig. 7 is described as having an actuator for applying vibration to the tire, but no details are given concerning the construction of the actuator or its interconnection with the tire.

9. Claims 2 and 7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 2, at line 3, "the response frequency" lacks proper antecedent basis. Further, it is unclear what constitutes a "response frequency" of a vehicle. What parameter has this "response frequency"? What is the cause of this "response"?

Claim 7 is indefinite because: "deformation of vibration" (line 2) is confusing and inconsistent with claim 1; "the load support direction (lines 2-3) lacks proper antecedent basis; and "to minimize the rolling resistance...caused by friction" (lines 3-4) is inaccurate (see page 23, line 26 to page 23, line 11). The examiner suggests that lines 2-4 of claim 7 be replaced with "frequency and phase of the vibration applied to the tire is controlled to minimize vibrational disturbances of the tire caused by irregularities in the surface of a road."

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. Claims 1-3 and 7 (as best understood) are rejected under 35 U.S.C. 102(b) as being anticipated by Baun (DE 3610519). Baun discloses a control system for increasing the friction force between a tire and a road surface. The friction force is increased by using an actuator to apply a medium to high frequency vibration to the tire. See the abstract and Figs. 3 and 4.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

13. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

14. Claims 4-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baun (DE 3610519). Baun (discussed above) discloses the use of a medium to high frequency vibration, but fails to specify the frequency range of the vibration. It would have been obvious to one of ordinary skill in the art to select the frequency ranges identified in claims 4-6 in order to maximize the friction force between the tire and the road surface. Further, the selection of optimum values within prior art general conditions is generally recognized as being within the level of ordinary skill in the art.

Conclusion

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Asano et al. teaches a control system that uses an electric motor to apply vibration to a wheel in order to determine the amount of friction force between the wheel and a road surface. GB 2052655 teaches a control system that applies vibration to a wheel assembly. Yamaguchi et al. teaches a control system that applies micro-vibration to the braking force of a wheel.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter C. English whose telephone number is 703-308-1377. The examiner can normally be reached on Monday through Thursday (7:00 AM - 5:00 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul N. Dickson can be reached on 703-308-2089. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9326 for regular communications and 703-872-9327 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1113.

Peter C. English 8/18/03
Primary Examiner
Art Unit 3616

pe
August 18, 2003